

Date: Sat, 25 Jun 94 04:30:09 PDT
From: Ham-Ant Mailing List and Newsgroup <ham-ant@ucsd.edu>
Errors-To: Ham-Ant-Errors@UCSD.Edu
Reply-To: Ham-Ant@UCSD.Edu
Precedence: Bulk
Subject: Ham-Ant Digest V94 #199
To: Ham-Ant

Ham-Ant Digest Sat, 25 Jun 94 Volume 94 : Issue 199

Today's Topics:

 Antenna Question
 Coaxial Relays
 Comet 2M/440/cellular mobile
 Dipole impedance?
 Help identify Thick Ethernet cable (2 msgs)
 HF Mobile Antennas (4 msgs)
 Quadfiliar helix for GPS
QUESTION: WANT TO BUY A CAR RADIOTRANCEIVER. WHAT IS A GOOD ONE?
 Thick Ethernet cable in place of RG cables ??? (2 msgs)

Send Replies or notes for publication to: <Ham-Ant@UCSD.Edu>
Send subscription requests to: <Ham-Ant-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Ant Digest are available
(by FTP only) from UCSD.Edu in directory "mailarchives/ham-ant".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 24 Jun 1994 08:17:54 GMT
From: agate!howland.reston.ans.net!vixen.cso.uiuc.edu!airwaves!rrb@ames.arpa
Subject: Antenna Question
To: ham-ant@ucsd.edu

I'm writing an article for my station here in Washington. What I want to know
is if there is a "better" design for an antenna than the "Sterba Curtain"
antenna. What I'm looking for is an antenna that can be built by the average
joe/jane that is tuned to a specific frequency that can be used to pick up
a station say, thirty or fourty miles away (we're only a 100 watt station,
soon to upgrade to a 500 watt transmitter). From what I've read, the best
design is this "sterba curtain" design, with the base measurement of 62.5
inches (our frequency is 89.9 FM). But this design may be a bit to large
for some people to build.

I'm also curious as to the effect of grounding. That is, where placement of an antenna is adversely affected by its environment (i.e. putting your antenna on the outside of your aluminum-sided house!). How could these effects be canceled, and how far should an antenna be away from these "grounded" materials before the signal will come in? How far up should an antenna be from the ground? How far away from your receiver can the antenna be?

A lot of questions I realize. But what the hell, I'm curious! If anyone could direct me towards a good book on the subject I'd like that too.

popllama@stein.u.washington.edu

Date: 24 Jun 94 15:55:45 GMT
From: news-mail-gateway@ucsd.edu
Subject: Coaxial Relays
To: ham-ant@ucsd.edu

Subject: Coax Relays
From: Ron Klimas, WZ1V
To: ham-ant@ucsd.edu, ham-homebrew@ucsd.edu
CC: ppagel@arrl.org

Tom WB7ASR wrote...

>>Can anyone tell me where I might find (purchase cheaply) some 12-24 VDC
>>relays that I can use to switch in/out my 2m and 70cm antenna preamps?
>>I need to take the preamps out-of-line before transmitting. They need to
>>operate at 145 and 443 MHz with minimum signal lost and capable of handling
>>150 watts of RF output power. I prefer PC mount type so I can mount them
>>inside the preamp bud box. Coaxial relays (Dowell or Tohtus) are big and
>>require coax connectors.

I've been designing & using HB mast-mounted preamp systems for years.
Let me pass along some words of wisdom on relays. Beware of flea-market
bargain types unless you've memorized some Mfg#/part#'s/isolation/power
handling specs first.

1. Power handling capability: This is a manufacturers spec, but generally, relays w/ N connectors can handle more power than BNC types. BNC's are adequate for up to 200 watts at 432, however. Absolutely FORGET about PCB mount relays unless you design a PCB with 50 ohm input & output impedance etched lines to a preamp circuit on the same board! "Dead-bug" style mounting is for 25 watt or less systems and desperate souls.
2. Isolation: You need to ensure that no more than +10dbm (10 mw.) of power

is applied to the preamp head input or output at any time. 200 watts of Tx power is +53dbm. The difference is 53-10 = 43db absolute minimum isolation required. Any good design should have a bit of overkill to avoid failure, and I would recommend at least 3 db worth in this case. What you really need then is a relay with 46 db of isolation.

Here are some I've measured in my lab w/ an IFR Spectrum analyzer:

Relay type	---- Db ISOLATION @ ----		
	144MHz	432MHz	903MHz
-----	-----	-----	-----
Allied Control 607W coax leads only	39	35	22
Amphenol 316-10082-3 BNC shorting type 26vdc	83	67	60
Danbury-Knudsen CR246BNS BNC 26vdc	39	29	22
Dowkey 60-2801 Type N	34	25	20
Dowkey 77-2202 BNC 12vdc	43	33	23
Joslyn JDS315-10002-3 BNC 26vdc	43	30	24
To Tsu CX540D BNC shorting type 12vdc (also available in type N)	75	56	50

I use To Tsu CX520's with type N connectors for my 2 meter kilowatt station. The 2m isolation on these is similar to the 540D. I run only 100 watts on 432 and use the Amphenols listed above. These can be bought at flea markets for \$10-15 and are an excellent bargain. The problem is you can't run 1000 watts through BNC connectors. The To Tsu's aren't cheap. \$85 new last time I checked. Well worth it for high power use, though.

Next problem is how to automatically control switching of the relays so you can't accidentally transmit into your nice expensive hard to reach preamp. What you'll need is a sequencer. There are commercial ones available. (ARR, SSB Electronic, etc.). But if you want to homebrew one, I would recommend you read my design article in March 1992 73 Magazine. The drilled PCB's for this are still available from FAR Circuits for about \$5. There is also a design in 1 of the Handbooks. I tested this one on a D.S.O. and found that its' timing was flawed when using CW semibreak-in. (It would engage the preamp before one transceiver of mine went back to receive mode). This will blow out preamps consistently over time. Forget about this one unless you are willing to give up your paddle !

I am now looking into MOV protection for preamp DC supply inputs. These devices are fairly cheap for the amount of protection they provide against Lightning E.M.P. pickup on your DC line. We hope to be putting in an article

on the selection and use of these from one of our guys in the Proceedings of the 20th Eastern VHF/UHF Conference this August.

73 - Ron, WZ1V, FN31, email: klimas%uhavax.dnet@ipgate.hartford.edu
Engineering/Ham BBS: (203)-768-4758 14400,8,N,1 ANSI
Voice: (203)-589-0528 when I'm home.

Date: Fri, 24 Jun 1994 17:53:46
From: ihnp4.ucsd.edu!dog.ee.lbl.gov!agate!library.ucla.edu!europa.eng.gtefsd.com!news.umbc.edu!eff!news.kei.com!ssd.intel.com!chnews!ornews.intel.com!ccm.hf.intel.com!brett_miller@network.
Subject: Comet 2M/440/cellular mobile
To: ham-ant@ucsd.edu

In article <lance_lee-200694132415@m42012.esl.com> lance_lee@smtp.ESL.COM (Lance Lee) writes:

>In article <BM1TYgr.bobsadur@delphi.com>, Robert Sadur
><bobsadur@delphi.com> wrote:

>> I saw Comet has a combination ham and cellular antenna. Does
>> anyone have experience with this? And does anyone know where
>> I can get a triplexer for these bands or a duplexer that would
>> have 2M and 440 on one side, and cellular on the other? It seems
>> strange that Comet doesn't sell such a thing but it seems they don't.
>> 73
>> Bob Sadur AA2NY

>Isn't cellular between 860-900 mhz? I don't remember exactly...
>From an AES catalog the COMET part nos. which should work are:
>CF-4130A duplexer
>CFX-431A triplexer
>CFX-4310C triplexer
>The high side is supposed to handle from 840 to 1400 mhz

>DIAMOND has the following which should work too:
>MX-3000N (high end: 850-1300 mhz)
>MX-3000D
>MX-3000DN
>MX-2000 (high end: 300-950 mhz)

>There's also an MX-37N but the specs indicate that the high end is between
>900-1300 mhz, so you probably shouldn't get this one. Good luck!

The cell phone transmit is 45 MHz below, so you need to include down to about 830 MHz.

Brett Miller N70LQ
Intel Corp.
American Fork, UT

brett_miller@ccm.hf.intel.com

Date: 24 Jun 1994 09:33:21 GMT
From: elroy.jpl.nasa.gov!swrinde!pipex!lyra.csx.cam.ac.uk!warwick!news.shef.ac.uk!
silver!ph922806@ames.arpa
Subject: Dipole impedance?
To: ham-ant@ucsd.edu

I've built several home designed, low power (approx 0.5Watts) short wave radio transmitters. At the moment I'm operating from a home made dipole aerial mounted horizontally with a full span of about 20 meters. To feed the dipole I'm using 50 Ohm co-axial cable (not the best thing) but what I'd really like to know is how do I adjust the dipole length to match the impedances correctly. If anyone knows or has any equations relating dipole length to impedance I'd be greatfull. Thanks

Date: Fri, 24 Jun 1994 13:55:02 GMT
From: ihnp4.ucsd.edu!usc!cs.utexas.edu!convex!news.duke.edu!godot.cc.duq.edu!
newsfeed.pitt.edu!gvls1!rossi@network.ucsd.edu
Subject: Help identify Thick Ethernet cable
To: ham-ant@ucsd.edu

I have a piece of thick ethernet cable marked :

Control Cable Inc. Baltimore MD. P/N 52016 E57891 TYPE CL2 75 (deg) C
111/2 AWG (UL)

Any idea what is is? Looks about the size of RG-8 with a yellow jacket.
Is it suitable for RF? VHF/UHF?

I has N connectors on each end so I can't see what the inside looks like unless I cut one off -- which I would rather not do.

=====
Pete Rossi - WA3NNA

rossi@vfl.paramax.COM

Unisys Corporation - Government Systems Group
Valley Forge Engineering Center - Paoli, Pennsylvania
=====

Date: 24 Jun 1994 15:27:22 GMT
From: agate!howland.reston.ans.net!europa.eng.gtefsd.com!uhog.mit.edu!
news.kei.com!ssd.intel.com!chnews!scorpion.ch.intel.com!cmoore@ames.arpa
Subject: Help identify Thick Ethernet cable
To: ham-ant@ucsd.edu

In article <1994Jun24.135502.18795@vfl.paramax.com>,
Pete Rossi <rossi@VFL.Paramax.COM> wrote:
>I have a piece of thick ethernet cable marked :
>Any idea what is it? Looks about the size of RG-8 with a yellow jacket.
>Is it suitable for RF? VHF/UHF? Pete Rossi - WA3NNA

Our Ethernet coax has almost identical RF characteristics to RG-8F.
It is not UV protected.

73, KG7BK, OOTC, CecilMoore@delphi.com

Date: Fri, 24 Jun 1994 17:28:04 GMT
From: ihnp4.ucsd.edu!agate!howland.reston.ans.net!europa.eng.gtefsd.com!
uhog.mit.edu!news.mtholyoke.edu!world!dts@network.ucsd.edu
Subject: HF Mobile Antennas
To: ham-ant@ucsd.edu

In article <patrick_tatro.57.7C558180@stortek.com> patrick_tatro@stortek.com
(Patrick Tatro) writes:

>In article <2u971a\$08k@m.ehd.hwc.ca> sbjarnas@hpb.hwc.ca (STEVE BJARNASON)
writes:

>>From: sbjarnas@hpb.hwc.ca (STEVE BJARNASON)

>>Subject: HF Mobile Antennas

>>Date: 22 Jun 1994 11:35:06 GMT

>

>>I have recently purchased a Kenwood TS-50S for use as my HF rig. I will
>>be using it mainly in my apartment but would also like to put it in my
>>4Runner to do some HF mobiling. Problem is, I have never used an HF rig
>>mobile and am unfamiliar with the current crop of HF mobile antennas. I
>>would appreciate any info that you might have or experiences (good or
>>bad) with specific antennas.

>>Please EMAIL me directly (see address below) or send a packet message to
>>me at VA3GE@VE3KYT.#EON.ON.CAN.NA

>

>> '73 de Stephen, VA3GE

>>-----

>

>I'm doing the same. Hustler offered a triband setup I thought looked good.

Check out the DK3 from High Sierra Antennas, Box 2389 Nevada City CA 95959, 916-273-3415

It's should work pretty well and is all-band.
Let me know how it works.
73, doug

Date: Wed, 22 Jun 1994 15:11:08 GMT
From: agate!howland.reston.ans.net!math.ohio-state.edu!magnus.acs.ohio-state.edu!
csn!server!stortek.com!patrick_tatro@ames.arpa
Subject: HF Mobile Antennas
To: ham-ant@ucsd.edu

In article <2u971a\$08k@m.ehd.hwc.ca> sbjarnas@hpb.hwc.ca (STEVE BJARNASON) writes:
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But as I look closer the bandwidth stinks. I dont know if thats the case with
all mobile HF antennas but beware you may get reasonable SWR's on only
a small portion of the band.

73's
Pat NOWCG

>STEPHEN BJARNASON
>AIR QUALITY - HEALTH EFFECTS RESEARCH SECTION
>RM. 337, BLDG. 8
>TUNNEY'S PASTURE
>OTTAWA, ON K1A0L2

>INTERNET: SBJARNAS@HPB.HWC.CA
> _____

Date: 24 Jun 94 15:11:47 GMT
From: ihnp4.ucsd.edu!dog.ee.lbl.gov!agate!howland.reston.ans.net!
vixen.cso.uiuc.edu!aries!hawley@network.ucsd.edu
Subject: HF Mobile Antennas
To: ham-ant@ucsd.edu

patrick_tatro@stortek.com (Patrick Tatro) writes:

>In article <2u971a\$08k@m.ehd.hwc.ca> sbjarnas@hpb.hwc.ca (STEVE BJARNASON)
writes:

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>>Subject: HF Mobile Antennas

>>Date: 22 Jun 1994 11:35:06 GMT

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>all mobile HF antennas but beware you may get reasonable SWR's on only
>a small portion of the band.

>73's

>Pat NOWCG

Well.....in general, the narrower the bandwidth, the better the efficiency.
So I wouldn't use the word "stinks". If you want to move up and down the
band you either have to get out of the car and readjust the stinger, or
set the antenna up say for lower frequency and use a remotely driven
series capacitor at the feedpoint to move up the band. How about that new
screwdriver motorized mobil antenna that was reviewed in CQ last month or
the one before? That's another way to do it....change the coil length
remotely to tune the antenna AND change bands.

Chuck Hawley.....KE9UW.....Urbana, Illinois
hawley@aries.scs.uiuc.edu
School of Chemical Sciences, Electronic Services
University of Illinois, Urbana-Champaign

Date: Fri, 24 Jun 1994 15:22:40 GMT
From: elroy.jpl.nasa.gov!swrinde!cs.utexas.edu!wotan.compaq.com!
twisto.eng.hou.compaq.com!pokey.eng.hou.compaq.com!susan@ames.arpa
Subject: Quadfiliar helix for GPS
To: ham-ant@ucsd.edu

Just got onto this forum, so please excuse if this is a repeat question.
Has anybody tried to build an external antenna for a GPS? In one of these
radio posts, someone mentioned that the quadrafiliar helix antenna was
what I needed and that the description could be found in old ARRL Antenna
Handbooks. Well, I got the book, but the information is too general for
a novice like me to translate into an actual antenna. Has anyone tried it?
Any suggestions? Although I paid a lot for the GPS, I hate to have to spend
the extra couple of hundred they want jst for 20' of coax and this antenna!
Thanks.

Susan Scott
email susan@twisto.compaq.com

Date: Wed, 22 Jun 1994 15:05:27 GMT
From: agate!howland.reston.ans.net!math.ohio-state.edu!magnus.acs.ohio-state.edu!
csn!server!stortek.com!patrick_tatro@ames.arpa
Subject: QUESTION: WANT TO BUY A CAR RADIOTRANCEIVER. WHAT IS A GOOD ONE?
To: ham-ant@ucsd.edu

In article <AB7I-1k4t5@atvkurs.msk.su> TV "Ostankino" <TV@atvkurs.msk.su> writes:
>From: TV "Ostankino" <TV@atvkurs.msk.su>
>Subject: QUESTION: WANT TO BUY A CAR RADIOTRANCEIVER. WHAT IS A GOOD ONE?
>Date: Wed, 22 Jun 94 11:13:11 +0400
ANSWER:
ELECTRIC IN THE RF SPECTRUM

Date: 24 Jun 1994 09:21:31 GMT
From: lll-winken.llnl.gov!sol.ctr.columbia.edu!howland.reston.ans.net!EU.net!
news.forth.gr!helios.intranet.gr!phaethon!demetre@ames.arpa
Subject: Thick Ethernet cable in place of RG cables ???
To: ham-ant@ucsd.edu

CQ Netters...

Has anyone ever used Thick Ethernet cables instead of the typical
RG 213, RG 214, H-100 cables ?? How does it compare with the RG cables ??

73's

Date: Fri, 24 Jun 1994 14:04:21 GMT
From: yuma!galen@purdue.edu
Subject: Thick Ethernet cable in place of RG cables ???
To: ham-ant@ucsd.edu

In article <2ue8ir\$e17@helios.intranet.gr> demetre@phaethon.intranet.gr (Demetre Koumanakos) writes:

>Has anyone ever used Thick Ethernet cables instead of the typical
>RG 213, RG 214, H-100 cables ?? How does it compare with the RG cables ??

The college club I'm with got a big, wooden spool of yellow Enet cable. We called the manufacturer and they said it would work fine up to about 500 MHz. It has a solid center conductor, two foil shields with two braided shields. It was tough to get a PL-259 on it, but it works quite well.

Oh yeah, it's 50 ohm ;-)
Galen, KF0YJ

Date: 24 Jun 1994 15:18:54 GMT
From: agate!howland.reston.ans.net!europa.eng.gtefsd.com!newsxfer.itd.umich.edu!zip.eecs.umich.edu!yeshua.marcam.com!news.kei.com!ssd.intel.com!chnews!scorpion.ch.intel.com!cmoore@ames.arpa
To: ham-ant@ucsd.edu

References <2u971a\$08k@m.ehd.hwc.ca>, <D>,
<patrick_tatro.57.7C558180@stortek.com>.
Subject : Re: HF Mobile Antennas

In article <patrick_tatro.57.7C558180@stortek.com>,
Patrick Tatro <patrick_tatro@stortek.com> wrote:

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>... Hustler offered a triband setup I thought looked good.
>But as I look closer the bandwidth stinks. I dont know if thats the case with
>all mobile HF antennas but beware you may get reasonable SWR's on only
>a small portion of the band. 73's Pat N0WCG

>
Hi Pat, get a mobile antenna tuner and quit worrying about bandwidth. You have a certain matched-line loss in the coax when the SWR is 1/1 and it is usually neglible in an HF mobile installation. An SWR of 4/1 to 5/1 makes your transmitter unhappy but it only doubles the loss in the coax which is still probably neglible. An antenna tuner makes your transmitter

happy, your coax loss is negligible, and your bandwidth increases as far as your transmitter is concerned. A ten foot run of 9913 can tolerate an SWR of 10/1 and still lose less than half a dB on any HF frequency. And the lower the bandwidth of a mobile antenna, the higher the Q of the loading coil, and the more efficient it is at radiating RF.

73, KG7BK, 00TC, CecilMoore@delphi.com

End of Ham-Ant Digest V94 #199
